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Characteristics of African American adolescent females who use emergency
contraception

By

Erin Little

B.S. Biology, Spelman College

A Thesis Submitted to the Graduate Faculty
of Georgia State University in Partial Fulfillment

of the

Requirements for the Degree

MASTER OF PUBLIC HEALTH

ATLANTA, GEORGIA

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APPROVAL PAGE

Characteristics of African American adolescent females who use emergency
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By

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Abstract

Unintended pregnancy remains to be a public health priority for adolescents as there are a myriad of negative social and developmental consequences for both young mothers and their children. The goal of this study was to examine associations of individual-level determinants of health with sexual risk behaviors and protective factors among a sample of African American female adolescents. African American adolescent females were recruited from sexual health clinics to participate in a cross-sectional survey at 18 months post-participation in a STD/HIV prevention trial. Surveys were administered using Audio Computer Assisted Self Interview (ACASI). Statistical analyses were run to determine associations of protective and sexual risk behaviors with age, education, household income status, sexual history, other contraception use and knowledge of emergency contraception (EC). A total of 410 surveys were included in the analyses. (N=410; mean age=19.06) Almost sixteen percent (n=65) of participants reported ever using emergency contraception. Bivariate analyses indicated that EC use among African American female adolescents was significantly associated with age, education level, job status, receipt of government assistance, age at first sex, knowledge of EC availability and number of average condom errors. The findings in this study are consistent with previous studies exploring social determinants and their relationship to sexual health practices among high risk populations. The findings of this study could be used to design effective pregnancy prevention initiatives including EC education and promotion targeting specific segments of the African American adolescent female population that may be at a greater risk for unintended pregnancies.

Keywords: emergency contraception, African American adolescent females,
unintended pregnancy

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Guo Z., Adomas A.B., Jackson E.D., Qin H., Townsend J.P. (2011) SIR2 and other genes are abundantly expressed in long-lived natural segregants for replicative aging of the budding yeast *Saccharomyces cerevisiae*. FEMS Yeast Research, no doi: DOI: 10.1111/j.1567-1364.2011.0072

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Chapter I-Introduction

Advances in family planning have been one of the major milestones in public health in the United States, particularly with the wide availability of various safe and effective methods of contraception. However, unintended pregnancy is still a significant public health concern, with almost half of pregnancies in the US being unintended (Finer & Zolna, 2011). Research has demonstrated a relationship between unwanted pregnancy and lack of prenatal care, infant mortality, low birth weight deliveries, later child abuse, economic hardship and other measures of poor health (Brown & Eisenberg, 1995). African American women have the greatest risk of unintended pregnancy; among adolescent females 19 years old and younger, more than 80% of pregnancies are unintended (Finer & Zolna, 2011). Birth rates for adolescents aged 15 to 19 years fell to a historic low of 31.3 births per 1000 in 2011, including the lowest reported rates for African Americans at 47.4 births per 1000. The adolescent birth rates for African Americans females, however, were more than double their White counterparts (21.8 per 1000) (Hamilton, Martin & Ventura, 2012). According to *The National Campaign to Prevent Teen and Unintended Pregnancy*, unintended pregnancies can cause immediate and long-term consequences for the child and the parents. On average, teen pregnancy and childbearing are closely linked to educational attainment, poverty and income, child well-being and health issues. Teenage

pregnancy and childbirth cost taxpayers at least \$9.4 billion in 2011; most of the public costs are associated with negative consequences for the children of teen mothers. This includes healthcare costs, child welfare costs, and increased incarceration rates of children of teen parents. This figure also includes lost tax revenue from teenage parents and their children over their adult lifetimes due to lower educational attainment and lower income (*The National Campaign to Prevent Teen and Unintended Pregnancy*, 2013).

There are various methods of preventing unintended pregnancy available to adolescents, including emergency contraception (EC). Emergency contraception is a method of contraception used to prevent pregnancy after sex occurs without a birth control method or failure of the birth control method. EC comes in two forms, an emergency contraceptive pill (ECP) and a copper intrauterine device (IUD) (Office of Population Affairs, 2014). The copper IUD can be inserted up to five days after ovulation to prevent pregnancy as emergency contraception. The copper IUD is a long acting reversible contraceptive can be left in place to provide ongoing contraception for up to 12 years (Trussell et al., 2014). Plan B One-Step is a brand of ECP. According to a press release by the US Food and Drug Administration (FDA), it was first approved by the FDA in July 2009 for use without a prescription for women aged 17 years and older; there was a prescription-only option for women aged 17 years and younger. In April 2013, Plan B One-Step was approved for nonprescription use for women as young as 15. In June 2013, Plan B One-Step became available for use by all women without a prescription or an age restriction (FDA, 2013). According to data from the 2006-2010 National Survey of Family Growth (NSFG), approximately 11% of sexually experienced women aged 15-44 years had used EC at least once in her lifetime. Eleven percent of Non-Hispanic white women and 11 % of Hispanic women have ever used EC compared to 7.9% African American women. Nearly 14%

of sexually experienced adolescent females aged 15-19 years old reported ever using emergency contraception. Among 15-19 year olds who reported using emergency contraception, 47% indicated they did so after having unprotected sex (Daniels, Jones, & Abma, 2013). Many women, however, are unaware EC is an option or perceive it as unnecessary (Grimes & Raymond, 2002). Ellerton et al stated that lack of knowledge of availability, timing, and proper use of EC is especially widespread among teenagers, as well as minority populations, low-income populations, and other high risk populations (Ellerton et al, 2000).

Recent research suggests that social factors, or social determinants of health, are key predictors of health outcomes and are critical contributors to health disparities (Marmot, 2005; Wilkinson & Marmot, 2003). The World Health Organization (WHO) defines social determinants of health as conditions in which people are born, grow, live, work and age. These circumstances are shaped by economics, social policies and politics (WHO, 2010). Five determinants of population health are generally recognized in the scientific literature: biology and genetics (e.g., age, sex), individual behavior (e.g., alcohol or injection drug-use, unprotected sex, smoking), social environment (e.g., discrimination, income, education level, marital status), physical environment (e.g., place of residence, crowding conditions, built environment [i.e., buildings, spaces, transportation systems, and products that are created or modified by people]), and health services (e.g., access to and quality of care, insurance status) (CDC, 2010; Tarlov, 1999). Healthy People 2020 is an initiative by the Office of Disease Prevention and Health Promotion that highlights the importance of addressing the social determinants of health by adding “create social and physical environments that promote good health for all” as one of four overarching goals to improve the health of Americans. Healthy People 2020 developed a framework reflecting five (5) key areas of social determinants of health including; economic

stability, education, social and community context, health and health care, and neighborhood and built environment. These areas reflect various issues that attribute to the underlying factors in social determinants of health (Office of Disease Prevention and Health Promotion, 2014).

This study is a secondary data analysis of the *Afiya* study conducted from 2005 to 2007 (Principal Investigator: Ralph DiClemente, Ph.D). *Afiya* is the Swahili meaning of “health”. The purpose of this study is to explore associations of determinants of health with sexual risk and protective factors among a group of African American adolescent females. There are currently no studies that explore specific characteristics in this subgroup. The objective is to identify potential social determinants of health associated with EC use to analyze and better understand drivers of health in order to develop evidence-based, targeted interventions to address and eliminate disparities in rates of unintended pregnancies.

Research Question

What are the biological, individual-level and social determinants of health associated with sexual risk and protective factors in a sample of African American adolescent females?

Chapter II-Review of the Literature

An unintended pregnancy is one that was either mistimed or unwanted. The average American woman spends more than three quarters, or three decades, of her reproductive life trying to avoid an unintended pregnancy (The Guttmacher Institute, 2000). If a woman did not want to get pregnant at the time of conception, but did want to get pregnant at some time in the future, the pregnancy is considered mistimed. If a woman did not want to become pregnant at the time of conception or at any time in the future, the pregnancy is considered unwanted. Mistimed and unwanted pregnancies in the United States account for about 31% and 20% of pregnancies, respectively (Finer & Zolna, 2014).

About 70%, or 43 million, women in the United States of childbearing age, 15-44 years, are at risk of unintended pregnancy (Jones, Mosher & Daniels, 2012). Eleven percent of all women at risk of unintended pregnancy are not currently using any method of contraception. Larger percentages of women under age 20 years, women who are unmarried and African American women are at increased risk because they are not using contraception compared with women who are older than age 20, married, and of another ethnic background. The proportion of women who are not using a contraceptive method is highest among women aged 15-19 years (18%) and lowest among women aged 40-44 years (9%). Additionally, a significantly higher proportion of

African American women reported not using a method of contraception (17%) compared to white (9.5%), Asian (10%) and Hispanic women (10%) (Jones et al., 2012). Adolescents who have sex at or before age 14 are less likely than older teens to have used a contraceptive method at their first sexual encounter and take longer to begin using contraceptives (Finer & Philbin, 2013). Disparities in rates of contraceptive use and unintended pregnancy between low-income women and those with higher incomes have increased (Finer & Henshaw, 2006). A significantly higher proportion of insured women compared to uninsured women reported use of prescription contraceptives (54% versus 45%). Women lacking health insurance were 30% less likely to report using prescription contraceptive methods than were women with private or public health insurance. Lack of health insurance is associated with reduced use of prescription contraceptives (Culwell & Feinglass, 2007).

Over 60 % of women of reproductive age currently practice contraception, with a majority relying on nonpermanent methods including hormonal methods (the pill, patch, implant, injectable and vaginal ring), IUD, and condoms. The most common nonpermanent choice is “the pill” combined oral contraceptive with 27.5% of contraceptive users reporting this as their contraceptive method of choice (Mosher and Jones, 2010). About 31% of teenagers aged 15-19 years reported using a contraceptive method (Jones et al., 2012). Four out of five sexually experienced women have used “the pill” (Daniels, Mosher & Jones, 2013). Combined oral contraceptives, which contain estrogen and progestin, were first approved in the United States in 1960. Since their initial introduction, extensive research on combined oral contraceptives has led to the reduction of the amounts of estrogen and progestin and the development of guidelines for proper usage. Oral contraceptives are currently accepted as a safe and effective method of preventing pregnancy when used as directed (Department of Health and Human Services, 1997).

With perfect use, the combined oral contraceptive has a failure rate of less than 1%. However, the typical use failure rate of 9%. This represents the number out of every 100 women who experienced an unintended pregnancy within the first year of actual use of the pill, including inconsistent and incorrect use (CDC, 2014).

Jones et al. state that among adolescents at risk of unintended pregnancy, 82% use a contraceptive method. Of those adolescents using contraceptives, 53% use the pill, 16% rely on other hormonal methods (including implants, injections, dermal patches and vaginal rings), and 3% rely on the IUD. They measured “at risk” for unintended pregnancy by identifying women who were using a contraceptive method during the month of the interview, and women who did not use a method of contraception during the month of the interview, but had been sexually active in the prior 3 months (Jones et al., 2012). In a prospective study of pregnant adolescents, contraceptive use (ever) was lower for young women aged 12-15 years compared to those aged 16-17 years and 18-19 years (Phipps et al., 2008). The Pregnancy Risk Assessment Monitoring System (PRAMS) is a surveillance tool used to collect population-based data on maternal attitudes and experiences before, during and shortly after pregnancy in 19 states, including Georgia. During 2004-2008, the rates of nonuse of contraception were among white, African American and Hispanic teenagers were not significantly different. However, African American adolescents were significantly less likely to use highly effective methods of birth control, and more likely to report avoiding contraceptives because of the side effects (CDC, 2012).

In 2010, the pregnancy rate among teenagers, women younger than 20, was 57.4 pregnancies per 1000 women, a record low and a 51% decline from the peak rate in 1990 of 116.9 pregnancies per 1000 women (Kost & Heinshaw, 2014). Santelli and colleagues concluded almost the entire decline in the pregnancy rate between 1995 and 2002 among women aged 18-

19 years was attributable to increased contraceptive use. Among women aged 15-17 years, approximately one-quarter of the pregnancy rate decline during the same period was attributable to reduced sexual activity and three-quarters to increased contraceptive use (Santelli et al., 2007).

Unintended pregnancies present a number of consequences for parents, specifically the mother, and the children. Brown and Eisenberg suggest the occurrence of abortion can be seen as a consequence of unintended pregnancy. Medical complications directly related to abortion include hemorrhage, uterine perforation, cervical injury and infection. Later complications that have been investigated include possible negative effects on subsequent pregnancy outcomes, particularly low birth weight, miscarriage and premature delivery. Additionally, considering abortion may pose moral and ethical problems to the women and those close to them and may be an emotionally difficult experience (Brown & Eisenberg, 1995). The abortion rate in 2005 was 19.4 per 1,000 women aged 15–44 years; this rate represents a 9% decline from 2000 (Jones et al., 2008). Finer and Zolna found that the proportion of unintended pregnancies ending in abortion decreased from 2001 to 2008 across all racial and ethnic subgroups. African American women have a higher percentage (50%) of unintended pregnancies ending in abortion compared to Non-Hispanic White women (36%) and Hispanic women (37%). Additionally, poor and low-income women are less likely to end an unintended pregnancy by abortion when compared to higher-income women. Consequently, poor women have a relatively high rate of unintended pregnancies resulting in birth (Finer & Zolna, 2014).

Studies have demonstrated a relationship between unwanted pregnancy and lack of prenatal care, infant mortality, low birth weight deliveries, later child abuse, economic hardship and other measures of poor health (Brown & Eisenberg, 1995). A 2008 study by Maynard and Hoffman found that compared to their peers who delay childbearing, teen mothers and their children may

experience many negative outcomes. Teen mothers are less likely to finish high school. They are more likely to rely on public assistance and more likely to be poor or low-income as adults. Children of teen mothers are more likely to have poorer educational, behavioral and health outcomes over the course of their lives than children born to older parents. Children of teen mothers are also more likely to become teen parents (Maynard & Hoffman, 2008). According to *The National Campaign to Prevent Teen and Unplanned Pregnancy*, the cost of unintended pregnancy presents significant financial burden on the public sector in addition to short and long term cost for the parents. Nationally, teen pregnancy and childbirth cost taxpayers at least \$9.4 million each year. In 2010, the state of Georgia spent \$395 million on teen childbearing. In 2008, public spending for births resulting from unintended pregnancies in Georgia totaled an estimated \$758 million. Total costs for the US and Georgia factor in costs associated with public health care (Medicaid and Children's Health Insurance Program (CHIP)), increased risk of participation in child welfare; and for children of teen mothers who have reached adolescence or young adulthood, increased risk of incarceration and lost tax revenue due to decreased earnings and spending. Total costs also factor in lost tax revenue due to decreased earnings and spending by the teen parents (*The National Campaign to Prevent Teen and Unplanned Pregnancy*, 2014). Trussell examined the total economic health care burden of unintended pregnancy in the United States and estimated the savings in unintended pregnancy costs attributable to contraceptive use. Direct medical costs of unintended pregnancy are an estimated \$5 billion annually, including costs for births, induced abortions and miscarriages. Pregnancies averted by contraceptive use resulted in a savings of \$19.3 billion in direct medical costs. He concluded that contraceptive use can potentially reduce direct and indirect costs of unintended pregnancies (Trussell, 2007). Emergency contraception is a method of contraception used to prevent pregnancy after sex

occurs without a birth control method or failure of the birth control method. EC comes in two forms, an emergency contraceptive pill (ECP) and a copper intrauterine device (IUD) (Office of Population Affairs, 2014). The copper IUD is a long acting reversible contraceptive that can be inserted up to five days after ovulation to prevent pregnancy. It can be left in place to provide ongoing contraception for up to 12 years (Trussell et al., 2014). Copper IUDs are more expensive up front than ECP depending on the patient's insurance status. Copper IUDs must be placed by a medical professional, costing up to \$1000 for the insertion and follow up exams. In comparison, ECP cost can range from \$30 to \$65, and does not require dealing with a medical professional (Planned Parenthood, 2014).

In the early 1970s, a regimen for emergency contraceptive pills was introduced by Professor Albert Yuzpe. The method consisted of taking two tablets, each containing 0.05 mg of ethinyl estradiol and 0.05 mg of norgestrel and to be taken within 72 hours of having unprotected sex. A second dose is taken 12 hours after the first dose (Yuzpe, Thurlow, Ramzy & Leyshon, 1974). A brief history of the availability and restrictions of EC starts in 1998 when the Preven Emergency Contraception Kit became the first FDA approved product specifically for emergency contraception. It was modeled after the Yuzpe regimen, and contained a pregnancy test, and four pills; two to be taken immediately and two to be taken 12 hours later. The FDA approved Plan B as the first progestin-only method of EC in 1999. Ten years later, in 2009, the FDA approved Plan B One Step, a new version of Plan B in the form of a single dose pill and the FDA granted over the counter access to purchase Plan B One Step for women aged 17 years and older. The most recent milestone in the history of EC is the FDA approval of Plan B One Step for over the counter access to anyone without an age restriction (Stacey, 2014). EC use has the potential to reduce the burden of unintended pregnancy by preventing an estimated 1.5 million

unintended pregnancies that result in childbirth and 700,000 abortions (Trussell, Stewart, Guest & Hatcher, 1992).

In a study comparing women who sought EC and women who sought family planning services, level of education and income (both indicators of socioeconomic status) were higher among the EC group when compared to the family planning group (Phipps et al., 2008). A 2013 National Center for Health Statistics (NCHS) Data Brief indicated that ever-use of EC increased with educational attainment with 12% of women with a bachelor's degree or higher and 11% of women with some college education reporting ever using it in comparison to 7.1% of women with a high school diploma or GED and 5.5% of women with less than a high school education (Daniels et al., 2013). This research suggests that women who use EC are more likely to have higher income and levels of educational attainment and potentially reduced rates of unintended pregnancies in women with higher income and more education compared to women with lower income and less education.

Between 2006 and 2010, 86% of female adolescents reported using contraceptives at their last sexual encounter, and 20% of sexually active female adolescents reported using the condom along with a hormonal contraceptive method the last time they had sex (Martinez, Copen & Abma, 2011). In another study, a high proportion of women, 83%, who sought EC had ever had unprotected sex. A lower proportion of women who has sought EC (12%) compared to women seeking family planning services (34%) had their first sexual encounter before the age of 15 years (Phipps et al., 2008).

Baldwin et al. conducted a study of EC awareness among California women aged 15-44 years. Nearly 76% of respondents had heard of EC but awareness was lower among teens, women of color, poor women, uninsured women and women with publicly funded health

insurance (Baldwin et al., 2008). Young age, low income, attending a community/government clinic for care and living in an urban area, all groups at high risk for unintended pregnancy, significantly increased the odds for using EC (Baldwin et al., 2008). In another study conducted by Delblanco et al., only 15% of girls aged 12-14 years had heard of ECP, compared with 44% of women aged 15 and 16 years and 51% of women aged 17 and 18 years. Authors speculate this may reflect the fact that older teenage girls are more likely to be sexually experienced and more likely to have had an unplanned pregnancy scare. White adolescent girls (37%) were twice as likely as African American adolescent girls (18%) and 50% more likely than Hispanic adolescent girls (25%) to have heard of ECP (Delblanco et al., 1998). In 2006-2008, 8% of women aged 15-17 and 18% of women aged 18-24 had ever used EC (Kavanaugh, Williams & Schwartz, 2011).

Current teen pregnancy prevention initiatives exist on the national and local levels. In 2010, CDC partnered with the Office of the Assistant to the Secretary of Health (OASH) to reduce teen pregnancy and to address disparities in teen pregnancy and birth rates as a part of the President's Teen Pregnancy Prevention Initiative. Funding was provided to private and public entities to provide medically accurate and age-appropriate evidence-based, innovative programs to reduce teen pregnancy. Initiatives were tailored for implementation in communities with the highest unintended pregnancy rates, with a primary focus on minority adolescents aged 15-19 years. There are four program goals: 1. Reduce the rates of pregnancies and births to youth in the target areas; 2. Increase youth access to evidence-based and evidence-informed programs to prevent teen pregnancy; 3. Increase linkages between teen pregnancy prevention programs and community-based clinical services; 4. Educate stakeholders about relevant strategies to reduce teen pregnancy and data on needs and resources in target communities. The five key components

to be addressed with the model are community mobilization and sustainability, evidence-based programs, increasing youth access to contraception and reproductive health care services, stakeholder education and working with diverse communities. From 2011- 2015, the projected outcomes include reducing teen birth rates by 10% in targeted communities, reducing teen pregnancies in target communities, increasing the percentage of youth who abstain from or delay sexual intercourse and to increase the consistent and correct use of condoms and other effective methods of contraception. Five national organizations and nine state and community based organizations received funding to achieve the goals set forth in 2010 by 2015. One of the community-based organizations selected is the Georgia Campaign for Adolescent Power and Potential (GCAPP) (CDC, 2013). The GCAPP program that focuses on teen pregnancy prevention is “We Are Change”. This program, following the community model in the President’s Teen Pregnancy Prevention Initiative, is designed to serve the needs of teens in Richmond County, Georgia (GCAPP, 2014).

Identifying and addressing specific health risk behaviors could help shape future interventions and educational initiatives and could potentially alleviate the public health impact of unintended teen pregnancy. Biological, individual-level and social determinants of health that could influence sexual risk and protective factors were identified based on studies of unintended pregnancy and EC use among various populations. The CDC defines protective factors as individual or environmental characteristics, conditions or behaviors that reduce the effects of stressful life events. These factors also increase an individual’s ability to avoid risks or hazards and promote social and emotional competence to thrive in all aspects of life, now and in the future (CDC, 2014). Unintended teen pregnancy is a stressful life event that has a host of negative social, developmental and health-related outcomes for the parents, specifically the

mothers, and the children. We chose to examine the relationships between EC use and age, education level, job status, use of government assistance, age at first sex, other contraception use, knowledge of EC availability and condom error to discover the associations, if any, of individual-level factors with sexual risk and protective factors among a sample of African American adolescent females. We hypothesized that there will be differences in age, education level, job status, use of government assistance, age at first sexual experience, other contraception usage and knowledge of EC between EC users and non-users.

Chapter III-Methods

Participants

From June 2005 to June 2007, African American adolescent females aged 14-20 years were recruited from three sexual health clinics in downtown Atlanta, Georgia, serving predominantly inner-city adolescents. A young African American female recruiter approached adolescents in the clinic waiting area, described the study, solicited participation, and assessed eligibility. Eligibility criteria included self-identifying as African American, aged 14-20 years, and reporting vaginal intercourse at least once without a condom in the past 6 months. Adolescents, who were married, currently pregnant, or attempting to become pregnant, were excluded from the study. Participants returned to the clinic to complete informed consent procedures, baseline assessments, and be randomized to trial conditions. Written informed consent was obtained from all adolescents with parental consent waived for those younger than 18 due to the confidential nature of clinic services. Of the eligible adolescents, 94% (N=701) enrolled in the study, completed baseline assessments and were randomized to study conditions. Participants were compensated \$75 for travel and childcare to attend intervention sessions and complete assessments. Data collection occurred at baseline, 6-, 12-, and 18-months following completion of the Afiya group-implemented STD/HIV intervention, and consisted of an Audio

Computer Assisted Self Interview (ACASI) and self-collected vaginal swab to assess STDs. Of the 701 enrolled in the study, 410 participated in the 18 month follow-up. This is a cross sectional study of the 18 month data. The Emory University and Georgia State University Institutional Review Boards (IRB) approved the study protocol.

Demographics

Age. Participants were prompted to report their current age. A median split was used to create two age groups to have a dichotomous variable for data analysis.

Education level. Participants were asked to report the last grade they completed in school. Response choices were (1) 8th grade or less (2) 9th-12th grade (3) Graduated high school or GED (4) 1 or 2 years of college (5) Other.

Job Status. Participants were asked to report if they had paid job. Response choices were yes (1) no (0)

Government assistance. Participants were asked “In the past 12 months, did you or anyone you live with receive any money or services from any of the following? (Check all that apply). Responses included: Welfare including TANF (Temporary Assistance to Needy Families), Food stamps, WIC (Women, Infants and Children) and Section 8 (housing subsidies). Government assistance was calculated by summing the number of types of government assistance used reported by each participant to create the government assistance scale. Scores ranged from 0 to 4 with larger values representing more government assistance.

Measures

Sexual history. Participants reported how old they were the first time they willingly had vaginal sex. A median split was used to create two age at first sex groups to have a dichotomous variable for data analysis.

Condom use. Participants were asked if they used a condom to prevent STDs or pregnancy the very last time they had sex, and the response options were yes (1) or no (0).

Contraception use. Participants were asked if they used other type(s) of protection the very last time they had sex, and to “check all that apply”. Response options were (65) Pill/Patch/Depo, (66) Withdrawal (67) None (68) Other.

Knowledge of EC availability. Participants were asked, “Did you know that EC is available over the counter at a drug store or pharmacy, without a prescription, for women 18 and older?” Response options were yes (1) or no (0).

EC use. Participants were asked if they had ever used “morning after pills” or emergency contraception. Response options were yes (1) or no (2).

Condom Error. Participants were asked, “In the past 7 days, did you experience any of these condom errors during vaginal sex? (Check all that apply)” Responses options were; did you start having sex without the condom, and then put the condom on later? (1), did you start with the condom on, then take it off before sex was over? (2), did the condom you wearing break during sex? (3), did the condom you were wearing slip off during sex? (4), did the condom your partner was wearing slip off as he was taking it out of your vagina? (5). Condom error was calculated by summing the number of errors reported by each participant to create the condom error scale. Scores ranged from 0 to 5 with larger values representing more condom error.

Data Analysis Plan

Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 22. Descriptive statistics were used to describe demographic information and frequency of EC use. Next, bivariate analyses compared adolescents who had reported ever using EC to those who had reported never using emergency contraception. Chi-square analyses examined associations between EC users and non-users and age, education level, job status, the use of government assistance, age at first sex, other contraception use, and knowledge of EC availability. An independent t-test examined differences between EC users and non-users and average condom error. Another independent t-test examined differences between EC users and non-users and average government assistance use. Logistic regression analyses examined independent variables to determine if they were predictors of EC use.

Chapter IV-Results

Descriptive Statistics

There were 701 African American adolescent female participants in the study; this paper focuses on a subset of 410 participants who completed the 18 month follow-up survey. The average participant age was 19 years ($M=19.06$, $SD=1.797$) and the age range was 15-22 years. More than half, 52.4% ($n=215$), of the participants had paid jobs, and 49.3% ($n=202$) lived with at least one parent. The average age at first sex was 15 years old ($M=14.98$, $SD=1.68$) and 38.5% ($n=158$) of participants experienced at least one condom error within a week of completing the survey. Of the 410 participants, 65 (15.9%), reported ever using emergency contraception. EC users had an average age of 19 years old ($M=19.49$, $SD=1.53$). More than two-thirds, 68.5% ($n=281$), of participants were unaware that EC was available without a prescription for women aged 18 years and older. Among EC users, 69.2% ($n=45$) indicated they used it because they had unplanned sex without birth control.

Bivariate Analyses

Bivariate analyses indicated that EC use among African American female adolescents was associated with multiple variables. Table 2 presents the bivariate analyses comparing

demographics of participants who reported ever using EC (n=65) to those who reported never using EC (n=345). Chi-square tests were performed and found relationships between EC use and various demographics including; older age $X^2 (1, N=410) = 3.94, p=.04$, higher education level $X^2 (1, N=410) = 25.18, p<.001$, positive job status $X^2 (1, N=410) = 5.83, p=.02$, and older age at first intercourse $X^2 (1, N=410) = 5.51, p=.02$. Table 3 presents the bivariate analyses comparing behaviors of participants who reported ever using EC (n=65) to those who reported never using EC (n=345). Chi-square tests also found relationships between EC use and various behaviors including; use of the withdrawal method the last time they had sex $X^2 (1, N=410) = 10.52, p=.001$, and knowledge of EC availability $X^2 (1, N=410) = 51.10, p<.001$. Table 4 presents the independent t-test results for average government assistance and average number of condom errors. The government assistance independent t-test revealed a statistically reliable difference between the means of government assistance for EC users ($M=1.12, s=.375$) and nonusers ($M=1.31, s=.595$), $t (133.412) = 3.31, p=.001, \alpha=.05$. The condom error independent t-test revealed a statistically reliable difference between the means of condom errors for EC users ($M=.308, s=.498$) and nonusers ($M=.571, s=.744$), $t (125.17) = 3.58, p<.001, \alpha=.05$.

Table 1. Demographic profile of study participants (n=410)

Variable	N	%	EC use (n=65)	No EC use (n=345)
Age (M=19)				
15-19 years old	235	57.3	30	205
20-22 years old	175	42.7	35	140
Education level				
8th grade or less	5	1.2	0	5
9th-12th grade	186	45.4	17	169
Graduated high school or GED	91	22.2	11	80
1-2 years of college	99	24.1	30	69
Other	29	7.1	7	22
Paid job				
Yes	215	52.4	43	172
No	195	47.6	22	173

Table 2. Chi square results of association of demographic variables among African American adolescent females aged 15-22 years who reported EC use or nonuse.

Variable	EC use (n=65)	No EC use (n=345)	X^2	df	p Value
Age (M=19)			3.94	1	.04
15-19 years old	30 (46.2%)	205 (59.4%)			
20-22 years old	35 (53.8%)	140 (40.6%)			
Education level			25.18	1	<.001
8th grade or less	0 (0%)	5 (1.4%)			
9th-12th grade	17 (26.2%)	169 (49%)			
Graduated high school or GED	11 (16.9%)	80 (23.2%)			
1-2 years of college	30 (46.2%)	69 (20%)			
Other	7 (10.8%)	22 (6.4%)			
Paid job			5.83	1	.02
Yes	43 (66.2%)	172 (49.9%)			
No	22 (33.8%)	173 (50.1%)			
Age at first sex (M=14.98)			5.51	1	.02
11-15 years old	31 (47.7%)	218 (63.2%)			
16-20 years old	34 (52.3%)	127 (36.8%)			

Table 3. Chi square analysis results of association of behavioral factors among African American adolescent females aged 15-22 years who reported EC use or nonuse.

Variable	EC use (n=65)	No EC use (n=345)	X ²	df	p Value
Condom use at last sex			3.24	1	.07
Yes	39 (60%)	165 (47.8%)			
No	26 (40%)	180 (52.2%)			
Pill/Patch/Depo use at last sex			.003	1	.96
Yes	16 (24.6%)	86 (24.9%)			
No	49 (75.4%)	259 (75.1%)			
Withdrawal method at last sex			10.52	1	.001
Yes	23 (35.4%)	61 (17.7%)			
No	42 (64.6%)	284 (82.3%)			
Knowledge of EC availability			51.10	1	<.001
Yes	45 (69.2%)	84 (24.3%)			
No	20 (30.8%)	261 (75.7%)			

Table 4. Independent t-test results

Variable	EC use (M, SD)	No EC use (M, SD)	p value
Government Assistance Scale	1.12, .375	1.31, .595	.015
Condom Error Scale	0.308, 0.498	0.571, 0.744	<.001

Multivariate analyses

We conducted logistic regression analyses for further examination of variables association with EC use to determine if these variables were predictors of EC use in the sample. Table 3 presents the logistic regression results of selected independent variables as predictors of EC use.

Education level is a predictor of EC use. Table 4 presents the logistic regression results of associated behaviors as predictors of EC use. Those who used the withdrawal method the last time they had sex had increased odds of EC use (OR=.432, 95% CI=.229-.813). Those who had knowledge of EC availability had increased odds of EC use (OR=.155, 95% CI=.086-.280). The number of average condom errors is a predictor of EC use (OR=.576, 95% CI=.345-.964).

Table 5. Logistic regression of association of selected independent variables as predictors of EC use

Variable	OR	95% CI	p Value
Age	.923	.486-1.755	.808
Education level			.017
8th grade or less	.000	.000	.999
9th-12th grade	.383	.126-1.163	.09
Graduated high school or GED	.476	.161-1.408	.179
1-2 years of college	1.362	.521-3.56	.528
Other	Referent		
Paid job	.746	.410-1.364	.344
Government assistance scale	.582	.290-1.168	.128

Table 6. Logistic regression of association of selected behavior variables as predictors of EC use

Variable	OR	95% CI	p Value
Withdrawal method at last sex	.432	.229-.813	.009
Knowledge of EC availability	.155	.086-.280	.000
Condom Error Scale	.576	.345-.964	.036

Chapter V-Discussion

Results indicated that many determinants of health are associated with sexual risk protective factors in African American female adolescents. Almost 16% of African American young women surveyed reported ever using EC. This prevalence was higher than that of adolescent females in previous studies of EC use (Daniels et al., 2013). This could indicate that more African American female adolescents have used EC than previous studies have found. Almost two-thirds of participants were unaware of availability of emergency contraception. This supports previous studies that showed awareness of EC was low among adolescents and women of color (Baldwin et al., 2008; Delblanco et al., 1998). In a study by Delblanco et al., after being told about the option of ECP, 67% of teenage girls said they would be likely to use ECP (Delblanco et al., 1998). This exposes a gap in knowledge among adolescents and African American women that could potentially be lessened by increasing awareness of EC through education.

Emergency contraception use was associated with African American female adolescents who had their first sexual encounter after age 15 years, which is consistent with previous research (Phipps et al., 2008; Kavanaugh et al., 2011). Emergency contraception use was also associated with adolescents aged 19 years and older which is consistent with Delblanco et al.

who speculate that older adolescents are more likely to use EC because older teenage girls are more likely to be sexually experienced and more likely to have had an unplanned pregnancy scare (Delblanco et al., 1998). According to these findings, adolescents with a later sexual debut and older adolescents are associated with EC use. This could reflect the fact that EC was only available over the counter for women aged 18 and older at the time of the 18-month follow up survey. It could still be beneficial to educate younger adolescents on the availability and use of EC so that when they become sexually active, they will be knowledgeable of options.

Emergency contraception use was associated with African American adolescent females who had at least 1 year of college, and a paid job. Emergency contraception users reported the use of fewer average government assistance programs and education level was shown to be a predictor of EC use. These findings are consistent with those from a study comparing EC users and those who sought family planning services and the NCHS data brief indicating that higher education level and income level were associated with EC use (Phipps et al., 2008; Daniels et al., 2013). This could mean women with higher education had access to more resources enabling them to seek and take advantage of emergency contraception. The relationship between having a paid job and EC use could be due to the cost and affordability of EC in that adolescents with more financial resources could be more likely to have the ability to purchase EC. Having higher education and a paid job could also be indicative of the result that older adolescents aged 19 years and older were more likely to have used EC than adolescents younger than 19 years. Older adolescents might be more likely to have a higher education level and a job.

When reviewing the findings in this paper, there are limitations to consider. Responses to the survey are all self-reported data, thus relying on participants to be honest and accurate. This study is cross sectional, in that it only looks at characteristics of participants at a single point at

the 18 month follow up survey, and is unable to establish causality of associations found. This study was limited to participants who reported using ECP, and did not inquire about use of another form of EC, the copper IUD. Therefore, the study could have missed individuals who may not have used the ECP, but the copper IUD to prevent unintended pregnancy instead. This sample consisted of African American adolescent females recruited from sexual health clinics and this the results may not generalize to other non-clinic recruited adolescent populations. Despite these limitations, this study contributes to the literature by identifying characteristics specific to the understudied group of African American adolescent female EC users.

Future research should further evaluate the social determinants of health explored in this study and should also introduce other factors that could potentially be associated with EC use. This includes perception of risk of unintended pregnancy, perception of likelihood to engage in risky sexual behaviors, and self-efficacy. Parental relationships could be explored in subsequent studies, because at the time of the original study, EC was only available to women over 18. This would have required adolescents to have a parent or guardian take them to a health care provider to get a prescription. This study was worthwhile in that it provided preliminary insights into subgroups of women who may be targeted for intervention studies in the future. There are differences among African American adolescent females that must be explored, as there are variations in behavioral patterns that can be efficiently addressed.

Findings from this study provide an in depth view of characteristics of African American female adolescent EC users. Interventions targeted to African American adolescents promoting sexual health and unintended pregnancy prevention should be inclusive of comprehensive information about contraception, including emergency contraception. Nonuse of the withdrawal method was associated with EC use. Among EC users, 69.2% (n=45) indicated they used it

because they had unplanned sex without birth control. These data suggest that adolescents should be educated on the various types of contraceptive options, how to access contraception and proper usage. The School Health Policies and Programs Study 2006 indicates that among U.S. high schools, only 58% taught methods of contraception in a required health education course and 56% provided pregnancy prevention services at school in one-on-one or small group sessions. Better health education could be a solution to unintended teen pregnancy (CDC, 2014). Particularly, improving knowledge of availability of EC is pertinent with more than two-thirds (68.5%, n=281) of participants unaware that EC was unavailable without a prescription for women aged 18 years and older (which was the FDA ruling at the time of the survey). Multivariate analyses demonstrated that adolescents with knowledge of EC availability had increased odds of using EC. Currently, with EC being available over the counter without an age restriction, it would be beneficial to educate adolescent females on the updated FDA ruling about the availability and proper use of EC. The average number of condom errors is a predictor of EC use in this study. Average condom errors is lower for EC users ($M=.308$, $s=.498$) compared to nonusers ($M=.571$, $s=.744$), however, with almost 40% (n=158) of participants reporting condom error, programs should demonstrate correct condom selection, application, use and disposal.

This study focused on specific variables in three (3) determinants of health that could have been associated with a protective factor against unintended pregnancy, EC use. These determinants could be key predictors of health outcomes and contributors to the disparities in unintended pregnancy rates. Identifying social determinants of health associated with EC use could help to analyze and better understand drivers of health in order to develop evidence-based, targeted interventions to address and eliminate disparities in rates of unintended pregnancies. Consistent evaluations of sexual health education and unintended pregnancy prevention

initiatives targeted to adolescents, specifically African American females, should be performed and programs should regularly be updated with the most current information available about contraceptive options. Ultimately, multi-faceted up-to-date educational initiatives could provide an opportunity to equip young African American women with the knowledge and skills to make informed decisions regarding their reproductive health.

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